WHAT IS CLAIMED IS:

1. A fiber optic communication system within a mobile platform, said system comprising:

a light source adapted to emit a system optical signal;

an electrical signal source adapted to provide a data input electrical signal; and

a feed forward photonic modulation circuit adapted to receive the data input electrical signal and the system optical signal and output a final modulated optical signal substantially free from residual error.

2. The system of Claim 1, wherein the feed forward photonic modulation circuit comprises a first portion adapted to receive the data input electrical signal and the system optical signal, generate a first modulated optical signal having a first wavelength, and split the first modulated optical signal into a first segment and a second segment.

3. The system of Claim 2, wherein the feed forward photonic modulation circuit further comprises a second portion adapted to receive the data input electrical signal, the system optical signal and the second segment of the first modulated optical signal, generate a second modulated optical signal having a second wavelength, and combine the second segment of the first modulated optical signal with the second modulated optical signal to generate a summed optical signal.

4. The system of Claim 3, wherein the feed forward photonic modulation circuit further comprises a third portion adapted to receive the summed optical signal and the system optical signal, and generate a corrective modulated optical signal having a third wavelength.

5. The system of Claim 4, wherein the feed forward photonic modulation circuit further comprises a fourth portion adapted to combine the first segment of the first modulated optical signal with the corrective optical signal to

generate a final modulated optical signal that has a high degree of linearity with respect to the data input electrical signal.

6. The system of Claim 5, wherein the first portion comprises a first electrical amplifier adapted to amplify the data input electrical signal to a first level and output a first amplified electrical signal.

7. The system of Claim 6, wherein the first portion further comprises a first optical modulating sub-circuit adapted to use the first amplified electrical signal to modulate the system optical signal and output the first modulated optical signal.

8. The system of Claim 7, wherein the first portion further comprises a splitter adapted to split the first modulated optical signal into the first segment and the second segment, wherein each of the first and second segment have the first wavelength.

9. The system of Claim 8, wherein the second portion comprises a second electrical amplifier adapted to amplify the data input electrical signal to a second level and output a second amplified electrical signal.

10. The system of Claim 9, wherein the second portion further comprises a second optical modulating sub-circuit adapted to use the second amplified electrical signal to modulate the system optical signal and output the second modulated optical signal.

11. The system of Claim 10, wherein second portion further comprises a first dichroic mirror adapted to combine the second segment of the first modulated optical signal with the second modulated optical signal and output the summed optical signal.

12. The system of Claim 11, wherein the third portion comprises an optical detector adapted to convert the summed optical signal into a corrective electrical signal.

13. The system of Claim 12, wherein the third portion further comprise a third electrical amplifier adapted to amplify the corrective electrical signal.

14. The system of Claim 13, wherein the third portion further comprises a third optical modulating sub-circuit adapted to use the amplified corrective electrical signal to modulate the system optical signal and output the corrective modulated optical signal.

15. The system of Claim 14, wherein the fourth portion comprises a delay device adapted to delay the first segment of the first modulated optical signal.

16. The system of Claim 14, wherein the fourth portion comprises a second dichroic mirror adapted to combine the first segment of the first modulated optical signal with the corrective modulated optical signal and output the final modulated optical signal.

17. A method for generating an optical signal having a high degree of linearity with respect to a data input electrical signal used to modulate the optical signal, said method comprising:

generating a first modulated optical signal using a data input electrical signal;

generating a corrective modulated signal utilizing a feed forward photonic modulation circuit; and

using the corrective modulated signal to correct for non-linearity in the first modulated optical signal utilizing the corrective modulated signal, therby generating a final modulated optical signal having a increased degree of linearity with respect to the data input electrical signal.

18. The method of Claim 17, wherein generating the first modulated optical signal comprises:

receiving the data input electrical signal and the system optical signal at a first portion of the feed forward photonic modulation circuit;

generating the first modulated optical signal having a first wavelength; and

splitting the first modulated optical signal into a first segment and a second segment.

19. The method of Claim 18, wherein generating the first modulated optical signal having a first wavelength comprises;

amplifying the data input electrical signal to a first level to produce a first amplified electrical signal; and

modulating the system optical signal utilizing the first amplified electrical signal to generate the first modulated optical signal.

20. The method of Claim 18, wherein generating the corrective modulated signal comprises:

receiving the data input electrical signal, the system optical signal and the second segment of the first modulated optical signal at a second portion of the feed forward photonic modulation circuit;

generating a second modulated optical signal having a second wavelength; and

combining the second segment of the first modulated optical signal with the second modulated optical signal to generate a summed optical signal.

21. The method of Claim 20, wherein generating the second modulated optical signal having a second wavelength comprises:

amplifying the data input electrical signal to a second level to produce a second amplified electrical signal; and

modulating the system optical signal utilizing the second amplified electrical signal to generate the second modulated optical signal.

22. The method of Claim 20, wherein generating the corrective modulated signal further comprises:

receiving the summed optical signal and the system optical signal at a third portion of the feed forward photonic modulation circuit; and

generating the corrective modulated optical signal having a third wavelength.

23. The method of Claim 22, wherein generating the corrective modulated optical signal having a third wavelength comprises:

converting the summed optical signal into a corrective electrical signal;

amplifying the corrective electrical signal; and

modulating the system optical signal utilizing the corrective electrical signal to generate the corrective modulated optical signal.

24 The method of Claim 22, wherein using the corrective modulated signal to correct for non-linearity in the modulated system optical signal comprises combining the first segment of the first modulated optical signal with the corrective optical signal at a fourth portion of the feed forward photonic modulation circuit to thereby generate the final modulated optical signal.

25. The method of Claim 24, wherein combining the first segment of the first modulated optical signal with the corrective optical signal comprises delaying the first segment of the first modulated optical signal.

26. A feed forward photonic modulation system for correcting residual error in a modulated optical signal, said system comprising:

a first portion adapted to receive a data input electrical signal and a system optical signal, generate a first modulated optical signal having a first wavelength, and split the first modulated optical signal into a first segment and a second segment;

a second portion adapted to receive the data input electrical signal, the system optical signal and the second segment of the first modulated optical signal, generate a second modulated optical signal having a second wavelength, and combine the second segment of the first modulated optical signal with the second modulated optical signal to generate a summed optical signal;

a third portion adapted to receive the summed optical signal and the system optical signal, and generate a corrective modulated optical signal having a third wavelength; and

a fourth portion adapted to combine the first segment of the first modulated optical signal with the corrective modulated optical signal to generate a final modulated optical signal that has a high degree of linearity with respect to the data input electrical signal.

27. The system of Claim 26, wherein the first portion comprises a first electrical amplifier adapted to amplify the data input electrical signal to a first level and output a first amplified electrical signal.

28. The system of Claim 27, wherein the first portion further comprises a first optical modulating sub-circuit adapted to use the first amplified electrical signal to modulate the system optical signal and output the first modulated optical signal.

29. The system of Claim 28, wherein the first portion further comprises a splitter adapted to split the first modulated optical signal into the first segment and the second segment, wherein each of the first and second segments have the first wavelength.

30. The system of Claim 29, wherein the second portion comprises a second electrical amplifier adapted to amplify the data input electrical signal to a second level and output a second amplified electrical signal.

31. The system of Claim 30, wherein the second portion further comprises a second optical modulating sub-circuit adapted to use the second amplified electrical signal to modulate the system optical signal and output the second modulated optical signal.

32. The system of Claim 31, wherein second portion further comprises a first dichroic mirror adapted to combine the second segment of the first modulated optical signal with the second modulated optical signal and output the summed optical signal.

33. The system of Claim 32, wherein the third portion comprises an optical detector adapted to convert the summed optical signal into a corrective electrical signal.

34. The system of Claim 33, wherein the third portion further comprises a third electrical amplifier adapted to amplify the corrective electrical signal.

35. The system of Claim 34, wherein the third portion further comprises a third optical modulating sub-circuit adapted to use the amplified corrective electrical signal to modulate the optical signal and output the corrective modulated optical signal.

36. The system of Claim 35, wherein the fourth portion comprises a delay device adapted to delay the first segment of the first optical signal.

37. The system of Claim 35, wherein the fourth portion comprises a second dichroic mirror adapted to combine the first segment of the first modulated optical signal with the corrective modulated optical and output the final modulated optical signal.